METEOROLOGICAL OFFICE

NEWSLETTER FOR CLIMATOLOGICAL OBSERVERS IN ENGLAND AND WALES

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FOR

CLIMATOLOGICAL OBSERVERS

IN

ENGLAND AND WALES

NO 6

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Produced by:

Met O 1
Observational Requirements
and Practices Branch
Eastern Road
Bracknell
Berkshire
RG12 2UR

Editorial

A new edition, a new cover and also a new editor.

Firstly we have the sixth issue of the Newsletter, a full issue. Perhaps a few more letters to the editor would have been preferred, but perhaps you are all happy and contented and just don't have any queries or suggestions to make about the weather, the Newsletter, the Meteorological Office, the price of beer in the Seychelles, or .....

Secondly, we have decided to brighten up the Newsletter with a new cover. The design is by Desiree Allen, whom many of you may have spoken to or even met whilst on a course at Shinfield Park. I hope that you approve of our new image.

Finally some information about myself. As most of you would have read in the last Newsletter, David Smith retired from the Meteorological Office at the end of September and is now sunning himself somewhere in the depths of Reading, and I have taken over his post. Having been around the Office for a number of years now, mainly sending up balloons, or telling other people how and when to send up balloons, or dropping things out of aeroplanes, I am now responsible, amongst other things, with climatological observations. I am pleasantly surprised and delighted that there are so many people, who out of an interest in meteorology and the weather, are willing to donate so much of their own time and effort to measure and record weather observations. I certainly appreciate your efforts and will spread the word amongst my colleagues and others, who like myself until quite recently, might not be aware of the tireless devotion of the members of the climatological observers network.

I am looking forward to meeting some of you who will be attending courses this year at Shinfield Park. To them and all the others - good observing, and thanks.

Mike Longworth

METEOROLOGICAL OFFICE NEWSLETTER NO. 6 (Met O 1b Contribution)

Met O 1b has four sub-divisions, three of which are concerned with meteorological observations and work closely together, and a fourth which provides direct support to aviation.

One group controls eight radiosonde stations dispersed over the United Kingdom whose task is to observe changes in temperature, humidity, wind speed and direction up through the atmosphere to an altitude of about 30 kilometres. They do this by releasing balloons every six hours which carry up a package of meteorological instruments and a radio transmitter to relay the observations back down to ground as they are made. The group is concerned, too, with similar stations elsewhere including our Ocean Weather Ships (see previous account of Met O 1a).

The second team operates a group of five radio direction-finding stations in the United Kingdom and at Gibraltar which work together to locate thunderstorms, as they develop, over a large area extending from far out in the Atlantic to Eastern Europe and from Scandinavia to North Africa. They are kept very busy during the summer months especially by storms over the Mediterranean area and the high mountain ranges of Europe. It is very rare, even in mid-winter, for there to be no thunderstorms somewhere within the area.

The third group has a rather different task, which is to watch for things going wrong. Recent work has included a special experiment for stations in south-east England to examine the performance and limitations of the barometers in use. The reliability of observations from a weather buoy two hundred miles west-south-west of Land's End is a current study. Automatic weather stations at several places in the United Kingdom, including one on a rock in the sea approach to the oil terminal in the Shetland Isles are regularly checked. Turning to the upper air, the reports of the 600 or so radiosonde stations over the whole of the northern hemisphere are watched closely and their accuracy compared. Another task is to undertake tests of new instruments before introduction into service so that users can be made aware of the accuracy to be expected.

Finally Met O 1b has a quite separate group which carries out regular calibration of special lights provided along airfield runways. The lights are used to determine the distance to which aircraft pilots can expect to see as they make their approach for a landing in poor visibility or at night time.

A H Hooper

News of Stations

Since the October 1980 edition of the Observers Newsletter we learn of the closure of the following climatological stations, though Barbrook and Ludlow are continuing to report rainfall:

Stations	Authority
Alderney	States of Alderney
Barbrook	Severn Trent Water Authority
Broadwell	Privately run
Gillingham	Borough Council
Hereford	Welsh Water Authority
Hurstpierpoint	Hurstpierpoint College
Kirkham	Ministry of Agriculture, Fisheries & Food
Ludlow	Severn Trent Water Authority
Usk	Usk College of Agriculture
York (Heslington)	Archbishop Holgates School

Stations which joined the network during 1980 included Kew, Royal Botanic Gardens (mentioned in the October Newsletter) and a privately run station at Towy Castle, near Carmarthen.

Presentation Barographs

A barograph was presented to the Reverend Canon Grieve for his long service as a voluntary observer. Canon Grieve ran his own climatological station for many years at Cartmel, but has recently had to retire owing to ill-health. Mr I G Hughes Principal Meteorological Officer, Manchester Airport made the presentation on behalf of the Meteorological Office on 26 September 1980.

Mr G Tomlinson, of the Forestry Commission, was presented with a barograph after 30 years as a voluntary observer at Silpho Moor. The presentation was made by Mr R McGain, Principal Meteorological Officer, Bawtry on hehalf of the Meteorological Office on 17 December 1980.

G W Swift

Borough of Engineer & Surveyor's Office
37 Wellington Square
Hastings
East Sussex
TN34 1PL

28 October 1980

Dear Sir

It was disappointing to read the Editorial in Newsletter No 5 concerning the shortage of letters to the Editor, a fact only too obvious if one compares the number of pages in this and previous editions.

In the hope that it might stimulate more Observers into putting pen to paper, I would like to add my comments in relation to the Grass minimum/Air minimum debate and put forward some other points which may be of interest.

In July of this year (1980) I had occasion to contact a fellow Observer from a nearby Station and he raised the question of grass minimum higher than air minimum. He has had previous occurrences queried by the Met Office and was concerned at an apparently high number of such instances in July. It should be noted at this point, bearing in mind the theory of Mr Hill (Newsletter No 3), that my grass minimum is set at 6pm and my colleagues at 0900h. The number of instances in July was eight at Hastings of which seven were greater than 0.2° higher and most occurred on corresponding days at each station.

Looking more closely at the weather on these occasions, I feel that it is significant that the weather at the time of setting my thermometer was always cloudy with rain on three occasions, whilst overnight it remained cloudy and rain occurred on five occasions. In all except one case the grass minimum read at 0900h was lower than the air minimum read at the time of setting the grass minimum (6pm) and I therefore feel that any error of setting or reading can be discounted. No strong winds were recorded around these dates and therefore vibration of the screen affecting the air minimum can also be discounted.

In view of the increasing evidence from various stations, is this phenomenon now worthy of much closer scrutiny by the Professionals at the Met Office? Why were my July readings not queried?

Following a very enjoyable and worthwhile week at the Meteorological Office on the Observers course, I was interested to note that many Observers do not make detailed entries in the Weather Diary section on Metform 3208B. This section has

been very fully completed at Hastings for at least 33 years and copies of all data recorded over the period are still kept. If this part of the form is of significant use, would it be possible to include an article in the Newsletter on the method to be used and detail required for adequate completion.

Referring now to the letter from Mr Johns (Newsletter No 3) regarding averages, I have checked my records which date back to 1875 for the three main observations referred to and find that the closest to the average for the whole period of records, ie maximum and minimum temperature and rainfall over 105 years and sunshine over 97 years, was in May 1963. The figures were; Sunshine 227.0 hours (average 227.3), Rainfall 45.5mm (average 44.2) and Mean temperature 10.9°C (average 11.7°C).

The closest yearly figures were in 1950; Sun 1772.4 hours (1769.0), Rain 712.4mm (747.2) and Mean Temp 10.6°C (10.2). Can anyone beat this?

Finally, or from the response to the request in Newsletter No 3, perhaps I should say firstly, my suggestions for an alternative title for the Newsletter are:- The Bracknell Bulletin or The Meteor.

Yours faithfully

R A Garrad

GRASS MIN/AIR MIN TEMPERATURES

It has been very interesting to read the letters on the subject of grass minimum and screen minimum temperatures. I feel it is now an appropriate time to try to summarise the points made and give some idea of Met O 3's attitude on the subject.

We acknowledge that on occasions an observer will record a screen minimum temperature which is lower than the grass minimum temperature. If we eliminate the obvious errors caused by mis-reading or faulty thermometers and the less obvious errors due to the screen minimum thermometer index being shaken down by vibration of the screen - **incidentally vibration caused by a sticky screen door** can cause the thermometer index to slide as well as vibration in a strong wind - we are left with a **smallish** number of cases which the difference is valid. These occasions almost invariably occur with two types of weather.

Firstly on a bright sunny **calm** morning, it is possible that, if the thermometers are reset at 0900 GMT, the temperature at grass level has been raised by the heat from the sun but that the air at screen level has not yet been warmed by convection. In this situation it is possible that the screen minimum thermometer is reset to a lower temperature than the grass minimum thermometer and if the next night is 'warm' then the values at the time of resetting are recorded as the minimum temperatures recorded at 0900 the next morning.

Secondly on a very dull, foggy or rainy night it is quite probable that radiative and convective effects are very much in balance and the grass minimum and screen minimum temperatures would normally be the same. However on the few occasions the soil will be at a higher temperature than the air temperature and on these occasions the grass minimum temperature may well be higher because of the heat received by conduction from the sub-soil.

The amount by which the grass minimum temperature can be higher than the screen minimum temperature is open to conjecture but we in Met O 3 consider it will always be less than 2°C and most likely to be less than 1°C. Unfortunately each case should really be considered individually and often the numerous factors to be taken into account - time of resulting thermometers, type of soil, state of sub-soil, soil temperatures, etc, etc, are not all available.

Johnnie Walker
Met O 3, Bracknell

Dear Sir

I have enjoyed your newsletters and am sorry that David Smith has retired. I hope he enjoys his retirement.

I am sorry there is a shortage of letters - perhaps you could use some questions and supply answers. I lecture at Hampstead at times and also entertain boys and girls at our met station and get some very good and sometimes very difficult questions which I am hardly competent to answer! Perhaps you could give replies which would, I hope, interest other readers. My three basic questions are as follows:

(1) I have seen it stated that the mean temperature of the world has been falling since 1940: How is this measured and what is the evidence? About 70% of the earth is covered by water from which observations must be most difficult and there is a large area (I imagine it would be 10% or more) caused by glaciers and deserts - Antarctica and Greenland alone cover about 6.2 million sq miles or 3.1% of the earths surface and then we must add mountain ranges, deserts, swamps and other inhospitable regions which can hardly supply reliable information. I would be interested in your experts views on this.

(2) The simpler mirages are explained in text books and I am sure that most motorists have seen white posts (?) reflected by the hot air above our black roads in summertime but how does considerable magnification take place? Does the air form into lenses or is there another explanation?

(3) Most stations report maximum and minimum temperatures and grass minima but few send in the maxima as recorded by a black bulb sun thermometer. If a new bridge or railway line were to be built at say Hampstead what maximum and minimum temperatures of the structure might be expected? Our highest air temperature was 34.5°C on 9 August 1911 and the minimum -12.8°C on 15 Febraury 1929 I believe the grass minimum has been down to -18.9°C I believe that E L Hawke who kept our records for 55 years had a sun thermometer and once recorded 71°C but I am uncertain of this figure recorded many years ago. After the Tay Bridge and Tacoma Bridge disasters the subject must be of interest.

I believe that the safety of the Forth Bridge, was in doubt owing to the cold in 1891 or 1895 which is surprising considering it was started in 1883 only four years after the low Blackadder reading(s) which though not accepted would have been very cold.

I look forward to future newsletters.

Yours sincerely

R A Tyssen-Gee
Hampstead

BLACK-BULB TEMPERATURES

Elsewhere in this newsletter Mr Tyssen-Gee comments that Black-bulb Temperatures are rarely recorded these days. In the past the black-bulb temperature was used as a method of measuring solar radiation but on account of the difficulty of obtaining comparable results with different instruments and of interpreting the indications of an individual instrument, black-bulb temperatures are not now recommended for this purpose. More simply, it has been found that the temperature of a black-bulb thermometer does not correlate very well with the temperature of objects near it and so can be classed as interesting but of little practical use.

It is likely that probable maximum temperatures of objects such as the Forth Road Bridge could be more closely estimated by theoretical or experimental methods than by using black-bulb thermometers.

It is hoped to comment on Mr Tyssen-Gee' other points later.

Johnnie Walker
Met O 3a

1 December 1980

Levington
Suffolk

Dear Editor

Each winter, I frequently hear from colleagues, the comment, "It is too cold to snow ." I usually reply "What about all the snow in the Polar regions where it is much colder?" I cannot, though, give a satisfactory answer to this comment. Will you please explain:

(a) The reasoning behind this idea

(b) Whether there is a different proccess at work for the formation of snow at very low temperatures than at temperatures nearer to freezing point.

K H Brown

IT'S TOO COLD FOR SNOW

As is fairly common with most of these meteorological points which give rise to discussion, there is really no simple answer. As Mr Brown rightly points out, snow occurs in this country at very different temperatures from those in Polar regions and yet the same remark could be made in either area as I have good cause to recall.

The coldest temperatures in this country occur on clear, calm nights when the earth is radiating freely to the sky; under such conditions snow would not be expected to fall. Our major falls of snow are more often than not associated with frontal precipitation which implies thick cloud and, therefore, little or no radiation loss, a probably increasing wind speed which results in increased turbulent mixing of the lower layers of the atmosphere (this is a process which is not conducive to extreme temperatures) and possibly in the case of a warm front the advection of warmer air anyway. Each of these would tend to raise the temperature before snow was likely to start falling: in combination they certainly would. So a basis for the saying begins to emerge.

However, we have to bear in mind that in this country typical temperatures one might expect are -5 to -10 deg C after a clear night and they may rise to -2 to 1 deg C with the approach of a warm front. In the Antarctic corresponding temperatures might be -40 to -30 deg C rising to -20 to -10 deg C as the snow moved in. So the remark is based on sound observation but "too cold for snow" is true only in a relative sense according to which part of the world you are in.

Of course there are other situations which I might have used to illustrate my point but they all involve the same principles as I have quoted above. If the Editor would allow me an extra 20 pages I might be able to explore these further.

I suppose the saying should be expressed more along the lines of "The present temperature is low and before we can expect snow to fall in any quantity, the temperature is likely to rise" but it is easy to appreciate how that was soon shortened to "It is too cold for snow".

P H Jeffries

WEATHER IN THE UNITED KINGDOM
JULY - DECEMBER 1980

The weather was cool and unsettled throughout the first three weeks of July with temperatures rarely exceeding 20°C. Although still unsettled, the last ten days of the month were warmer with a maximum temperature of 28.5°C being recorded at Benson in Oxfordshire on the 25th. Monthly rainfall totals were very variable; only about 30 per cent of the normal was recorded in the Doncaster area, whilst other areas were wet with more than twice the normal rainfall in parts of Bedfordshire, Kent and East Sussex. In the 24 hour from 0900 GMT on the 7th 77 mm of rain was recorded at Easbourne and during the last week of the month thunderstorms led to flooding in some areas.

The unsettled weather continued into August with further thunderstorms in places. On the 1st 53 mm of rain fell in just over an hour at Lakenheath in Suffolk and in the Cambridge area the ground was covered by hail for a time. On the 7th rainfall was very heavy in parts of the east Midlands, Lincolnshire and Norfolk, more than 100 mm being recorded near Fakenham in Norfolk. The 14th was a very wet day in many areas with widespread flooding occurring in the Midlands; 107 mm was recorded at Weekley in Northamptonshire and there were several other reports of rainfall in excess of 70 mm during the day. During the last ten days of the month the weather became more settled generally, although the 29th was another very wet day in many areas.

September was quite a warm month and in some places, particularly in the east, rainfall was well below average. In contrast, however, thunderstorms and heavy rainfall occurred in some areas; on the 19th extreme south-eastern districts of England and parts of East Anglia were affected with more than 50 mm of rain falling in some places and on the 20th 95 mm fell in about 12 hours at Worthing in West Sussex.

October was a generally unsettled and wet month, on the 10th heavy rainfall again occurred at Worthing with more than 100 mm being recorded in parts of the town and later in the month extensive flooding occurred in parts of North Wales and north-western England following heavy rainfall on the 26th and 27th. Although it was often cool during the month, the nights of 26th/27th and 27th/28th were unusually warm in southern England with minima of around 15 or 16°C.

The most notable feature of the weather during November was the marked variation in temperature which occurred during the month. After a mild start, the period between the 3rd and 8th was very cold, particularly in southern districts. Daytime temperatures were very low and even on Jersey in the Channel Islands the maximum on the 5th was only

just above freezing. On the 9th it became generally less cold and on the 14th very mild weather spread across the United Kingdom. The mild, but often wet and windy spell lasted for ten days before colder weather returned once more. By late on the 27th a very cold northerly airstream spread across all areas with snow showers in many districts. It then remained very cold until the end of the month, although snow showers were confined to south-eastern areas by that time. There were a few cold days during December but the month was mostly rather mild. Sunshine totals were well above average in many areas and in some parts of England less than half the normal rainfall was recorded.

Ogwr Borough Council
Bridgend
Mid-Glamorgan

Dear Sir

In this time of cut-backs, squeezes etc, observers may be interested in the way that our station has accidentally avoided the axe.

Two years ago I attended an observers course at Shinfield Park and while chatting to a fellow observer in the bar, discovered that at his station he publicised his daily readings locally.

On my return I eventually persuaded the powers that be to copy the idea and went ahead with the purchase of a formica type sign to be attached below our sunshine recorder. I then obtained "Velleda" dry wipe board markers with which to enter the daily readings on the sign. These pens withstand rain (or should I call it precipitation) but can easily be wiped off with a duster, or even a finger.

Our enclosure is situated in a public park and we now have a constant flow of interested members of the public discussing the readings, comparing Met Office forecasts with actual readings etc. This small additional outlay has stimulated enough local interest to enable us to ward off the threat of closure to the station (I hope)!

Perhaps the moral of this tale is: when on a course at Shinfield Park the benefits are not all in the classroom.

Yours faithfully

S Rosser
Natural Amenities Officer
for Leisure Services Officer